United States Department of Agriculture

Conservation Enhancement Activity

E528P

CONSERVATION STEWARDSHIP PROGRAM

Implementing Bale or Swath Grazing to increase organic matter and reduce nutrients in surface water.

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Pasture, Crop (Annual & Mixed), Crop (Perennial), Range

RESOURCE CONCERN: Soil, Water

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Improve organic matter, aggregate stability and soil organism habitat in the soil by leaving the biomass harvested from the field on site for animal use, or supplementing organic matter needs with off-field forages. Grazing harvested forages in this manner, will help to incorporate organic matter, feed and diversify the soil microbiome, build better aggregation and increase soil health and critical functions such as infiltration, nutrient cycling, and weather resilience. Forages should be placed evenly throughout the field, but can be concentrated in areas where particular concerns, such as bare ground, need to be remedied. Decisions of forage placement must take into account areas that would be sensitive to such activity such as protecting surface waters from nutrients or steep slopes from erosion.

Criteria

- A written plan for matching the forage quantity and quality produced with the grazing and/or browsing demand will be followed.
- Graze harvested forages to help incorporate organic matter into the soil and to optimize delivery of nutrients to the animals by incorporating the intensity, frequency, timing and duration of grazing and/or browsing needed as determined by

a planning process that includes: 1) Clear objectives, 2) A resource inventory including a forage inventory, structural improvements and existing resource conditions, 3) Grazing plan, and 4) All potential contingency plans.

- Supplemental feed and/or minerals will be provided as needed to meet the nutritional requirements of the kind and class of grazing and/or browsing livestock.
- Forage access should be designed to meet the objective of the identified resource concern(s) of the field and may be concentrated in areas where concerns, such as bare ground, need to be remedied. Decisions of forage placement must consider areas that would be sensitive to such activity such as protecting surface waters from nutrients or steep slopes from erosion.
- Baling and swathing on fields where this enhancement is applied should meet stubble heights found in NRCS Conservation Practice Standard Forage Harvest Management (Code 511).
- Off-field forages used should not contain noxious or invasive weeds.
- Test soil annually to monitor build-up of excessive nutrient levels. Select sites with low to moderate soils test to supplement organic matter and provide nutrients. Avoid sites with already high nutrient levels. Consideration soil texture constraints for bale locations.
- All non-degradable bale material must be removed from the field when bales are gone.
- Use electric fencing or separate paddocks to control livestock access to bales or swaths to ensure forages are used efficiently.

Considerations:

- Bales with plastic twine should be placed on their ends to facilitate removal of twine prior to feeding. Net wrap may be left on to assist with controlled feeding.

- Design the size of area or number of bales or swaths to provide enough feed for the livestock for the desired period. (usually 2-5 days). Example:

  Average weight of round bale: 900 #
  Dry Matter (% dry × bale weight): 900# × 85% = 765#
  Loss for storage and feeding waste (765# × 75%) = 574# DM/Bale

  574# DM ÷ 30# DM/Cow/Day = 19 cows would use one round bale per day

  100 cows ÷ 19 cows/round bale/day = 5.2 bales per day to feed the herd
  5.2 bales per day × 90 days= 468 bales
  468 bales ÷ 25 bales per acre = 19 acres needed to bale graze.

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Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, acquire a Grazing Management Plan on field(s) where swath or bale grazing is planned and provide to NRCS for review and approval. Plans must include all the following components:
  - o Producer goals, objectives and resource concerns
  - o Location and condition of structural improvements
  - o Watering sites with availability, quantity and quality
  - o Forage inventory
  - o Forage-animal balance sheet
  - o Grazing plan for livestock movement
  - o Contingency plan
  - o Monitoring plan
  - o Calculations for determining number of bales or swath rows needed:
    1. Herd size: _____
    2. Average bale weight or swath production (pounds per acre): _____
    3. Average forage Dry Matter (DM)%_____
    4. Average DM # Intake/Cow/Day_____
    5. Number of bales or swath row area needed per day: _____
    6. Spacing of bales (if applicable) based on local criteria_____
    7. Duration of bale or swath grazing (days)_____
    8. Acres needed for bale or swath grazing period: _____

- ☐ Prior to implementation, identify location(s) where bale or swath grazing will occur and proximity to sensitive areas such as surface water and soil and drainage limitations.
- ☐ Prior to implementation, provide current soil test results (no older than 2 years) in identified areas for bales or swaths to NRCS.
- ☐ During implementation record location(s) of bale placement or swathing.
- ☐ During implementation, keep records of livestock movement through bale or swathing areas.
- ☐ During implementation, monitor livestock condition and feed quality.
- ☐ During implementation, record swathing or mowing heights.
- ☐ After implementation, provide the following items for review by NRCS:
  - o A map showing bale or swath grazing areas.
  - o Forage-animal balance sheet
  - o Records of livestock movement through bale or swathing areas.

- Records of swathing or mowing heights.
- Written modifications to grazing management plan based on results of prior bale/swath grazing season and soil test results

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NRCS will:

- ☐ As needed, provide technical assistance to participant as requested
- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Prescribed Grazing (Code 528) and supporting documents that are needed to implement this enhancement, such as forage-animal balance forms
- ☐ Prior to implementation, provide and explain NRCS Conservation Practice Standard Forage Harvest Management (Code 511) stubble height requirements
- ☐ Prior to implementation, provide assistance with bale spacing recommendations and calculations for determining number of bales or swath rows needed
- ☐ Prior to implementation, review soils test results for identified on bale/swath grazing areas
- ☐ After implementation, review map and locations of bale/swath grazing areas
- ☐ After implementation, review records of livestock movement through bale/swath grazing areas
- ☐ After implementation, review forage-animal balance sheet
- ☐ After implementation, review records of mowing/swathing heights
- ☐ After implementation, review modifications made to the grazing management plan

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

_____ _____

NRCS Technical Adequacy Signature Date

United States Department of Agriculture

South Dakota (SD) Supplement to Conservation Enhancement Activity

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Additional Criteria for SD:

In addition to the criteria specified in the national job sheet E528P, the following additional criteria apply in SD:

- Enhancement will only be scheduled on acres in which bale/swath grazing occurs. (Example: Planning land unit is 150 acres, but bales will only cover 20 acres of that Planned Land Unit (PLU). Schedule the enhancement for 20 acres).
- If the goal is animal performance, calculate pounds of feed needed through the SD Grazing Tool's Feed and Forage Balance Sheet or use the guidance on the National Job Sheet.
- If the goal is to increase organic matter, you may need to increase the pounds of feed needed to account for organic matter being left in the field, if using the SD Grazing Tool to determine amount needed.
- If the goal is to increase organic matter, consider using soil tests that evaluate soil carbon. Consider using a soil health assessment test or permanganate oxidizable carbon test (POX C – gives an indication of carbon available to the microbial population in the soil.) Increase in values from these tests may show improvements in soil health.
- When selecting sites for either swath or bale grazing in the winter, consider sites that have adequate wind protection. May need to consider use of portable windbreaks if no natural wind protection is available.
- Recommend developing a contingency plan for when conditions exist that bale or swath grazing is not feasible (e.g., snow depth, wet conditions, etc.)

For Bale Grazing (cropland, pasture, or range land use):

- Bale spacing should be no more than 40 feet apart for adequate nutrient deposition
- Site selection:
  - Select sites that are level to gently sloping – avoid steep areas that are subject to high surface runoff.

  - Try to select sites that have low nutrient status (use soil tests to determine.)
  - Avoid areas near riparian zones or water conveyances.
  - Use caution when bale grazing on sandy soils located above shallow aquifers.
- Avoid bale grazing when wet soil conditions are present to limit compaction.
- Consider altering bale grazing locations from one year to the next to limit residue accumulation.
- When bale grazing on native range, make sure bales contain no weed seeds or species that shouldn't be introduced to the grazing unit, as this may result in a detrimental change in plant community.
  - Areas to consider for bale grazing include: thin claypan or claypan areas, or bare ground areas (such as those impacted by prairie dogs). The added organic matter from the bales may help increase infiltration in these areas.

For Swath Grazing (typically annual or perennial (hay) cropland, or pastureland use):

- Recommended to swath graze spring seeded annuals such as cereals, winter annuals, or annual legumes, though perennial vegetation may be swathed as well.
- Cut forages between late milk and hard dough stages. The closer cutting is to hard dough, the more biomass available without sacrificing too much nutritive value.
- When planning swath grazing:
  - Limit feed allowance by using an electric fence.
    - Fence perpendicular to the swath to minimize trampling of forages and aid in livestock finding swath under snow.
  - Limit feed allowance to 2 – 5 days at a time.
    - Limiting feed will prevent digestive issues that sometimes occur with high quality forages (e.g., acidosis).
- Recommend monitoring body condition during swath grazing as more energy is needed compared to other feeding methods.

If planned land use is Pasture or Range, the following additional requirements apply in SD:

- Maximum 50 percent (%) utilization. Ocular methods on key or representative areas are adequate, but utilization methods such as landscape appearance or key species should be used to calibrate field estimates. Exceptions include dormant season grazing (60%

utilization) and grazing prescriptions on rangeland that are designed to alter the present plant community through intensive grazing by livestock (i.e., suppression of invasive species). In these cases, the desired degree of use of management species should be documented within the grazing plan and/or assistance notes.

- Adequate plant recovery periods must be provided. On rangelands provide a minimum of 45 days of growing season recovery between grazing events during the growing season. On pasture provide a minimum of 30 consecutive days of growing season recovery between grazing events. The growing season is approximately April 1 through October 1.
- Alter timing of grazing in each pasture by at least 2 weeks from year to year if grazing occurs during the growing season.

Additional Documentation Requirements for SD:

In addition to the documentation requirements specified in the National job sheet E528P, the following additional documentation requirements apply in SD.

- Complete the SD Grazing Tool (SD-CPA-39 Forage/Animal Inventory, Grazing Schedule using the SD-CPA-15 or similar form, and SD-CPA-16).
- Complete a drought contingency plan using the SD Drought Tool or provide the participant with a copy of the example drought contingency plan located within the SD Prescribed Grazing Technical Note 9.
- Soil test results